The Northwestern MILLER
MILLING PRODUCTION SECTION

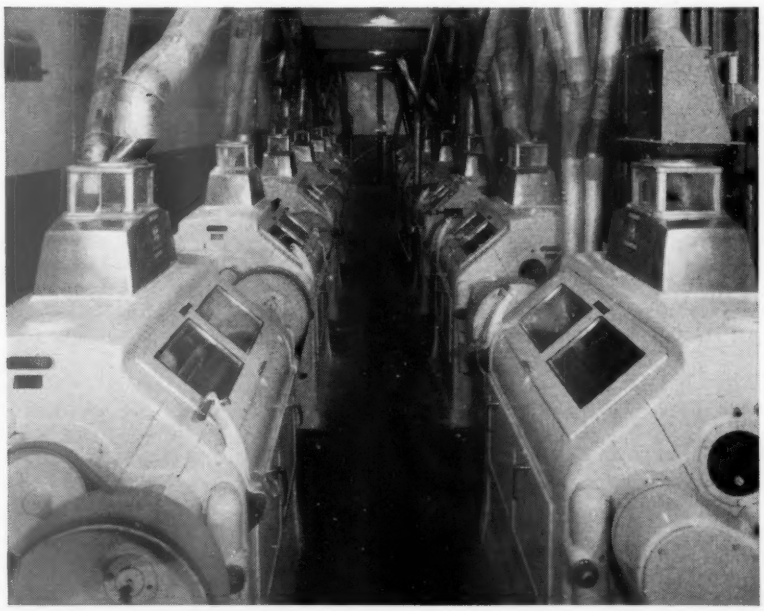
Details of New California Milling Corp. Flour Mill at Los Angeles

On Sept. 27 the California Milling Corp. started up a new flour mill at Los Angeles. Within a few hours the mill was operating at its rated capacity and was producing flour of a quality well up to standard. At the same time the extraction had already exceeded the levels previously obtained in an existing mill at the same site. The new mill has now settled down at its overload capacity of 1,900 cwt. per 24 hours, with further improvements in the extraction levels.

The new flour mill was built for the California Milling Corp., by Henry Simon, Ltd., the British milling engineering firm. It is the first flour mill to be built in the U.S. other than by a U.S. company, and it represents a considerable advance in mill engineering and in milling technique. Automatic controls have been extensively used in order to cut down the requirements in labor. So successful has been the design of the mill that only one man is needed to look after both mill and cleaning plant during the night shift, and only one cleaner is required as against three in the company's other mill of similar capacity at the same site. The achievement is made more remarkable by the fact that the order for the new mill was placed in September, 1955.

The wheat cleaning plant has been designed in two parts operating at different capacities. The first section, from the grain elevator up to and including the washer stoner and Whizzer, is of a capacity high enough to clean during two shifts sufficient wheat for 24 hours' milling, and it does not need any supervision at night. It includes conventional cleaning machines, millerators, disc separators, Entoleter scourer-aspirator, and a Simon washer stoner and Whizzer. It is also equipped with an autodamper so that extra moisture may be added to dry wheats. Automatic control devices are provided to warn against possible disturbances in the flow. Exact measurers under the temper bins are provided with stop and start devices related to the surge bin above the first break weigher. This gives direct control of the tempered wheat cleaning so that the entire cleaning plant requires the minimum of supervision.

The mill diagram makes provision for a five-break system, with divisions into coarse and fine from the second to the fifth break. This surface is supplemented by the addition of an extensive chunks and sizings system. The purification system handles streams from all five breaks and from the first and second chunks and sizings. The size range of the particles treated follows the standard Simon practice.



ROLLER FLOOR—This is the roller floor of the new California Milling Corp. flour mill at Los Angeles. Note the absence of windows. The mill has been in operation since Sept. 27.

Rollermill Floor

The mill is equipped throughout with Simon G rollermills, which have dual metal Evenchill rolls and chain differentials. Each half stand is independently driven so that the rolls in one half can be changed on the run without interrupting the work of the other. All the rolls are equipped with the Feedmaster device which provides an even distribution of stock on the full length of the feed roll and the finely corrugated rolls have Rollmasters and warning lights to release the main rolls and give visible notice when the feed runs off.

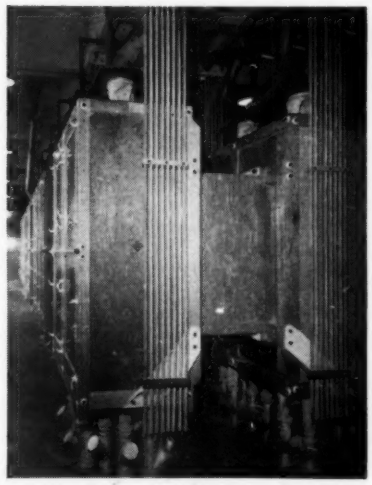
The purifiers are Simon's all-metal Type S machines, and they are fitted with Rotatubes. Great Western sifters equipped with Nordyke sieves provide the necessary sifting surface.

The pneumatic conveying system in the mill has one main line of 41 elevating pipes served by diffusers, one medium pressure fan and a filter. The system has been planned to provide adequate flexibility in the handling of soft, medium and hard wheats at different capacities and incorporates sufficient margin for overload conditions — the margin which has been utilized to give such a spectacular increase over the rated capacity. A special feature is the ease with which the plant starts under full load. Efficient planning and the use of the pneumatic system have made it possible to do without horizontal conveyors entirely, apart from those needed for collecting and mixing flour.

Finished Products

The finished products are handled by a Simon bulk flour blowing system of a type that has been installed in numerous mills and bakeries in Britain. They are discharged from the bulk storage bins by Twin Worm bin dischargers fitted with variable speed drives.

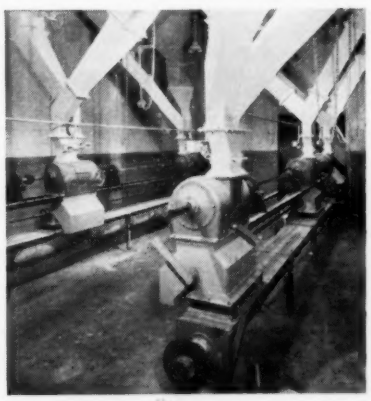
Automatic weighers are fitted at various points in the raw material and finished product flows in order to insure that both the cleaning plants and the mill are maintained at the highest level of efficiency. The design of the plant is notable for the elimination of valves and points where special adjustment may be necessary, in order to simplify the task of supervision.



SIFTERS—Individually driven Great Western sifters are part of the equipment in the new California Milling Corp. flour mill at Los Angeles.

The California Milling Corp. has grown out of many years of milling experience by the Viault family, which started in business in Arizona in 1906. The family's interest in milling can be traced further back to an early mill in Minnesota; two members of the family occupy the chief positions in the present company, which runs, in addition to the new mill, a mill in Los Angeles of 2,200 sacks capacity, with a 600-ton feed mill and a 635,000 bu. grain storage. A feed mill and grain elevator at Corcoran, Cal., a distribution business at San Diego and a grain brokerage office at San Francisco make up the California milling group. Frank Viault, Sr., is the chairman of the board,

(Continued on page 12a)



MEASURERS — Wheat measurers under temper bins in new flour mill are equipped with automatic stop and start control.

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Finnish Mill Example of Modern Engineering Skill

Interior Design, Equipment Show Careful Planning

INTERIOR OF HAMEENLINNA MILL — At the left are the nine all-metal purifiers, totally enclosed, streamlined and painted eau-de-Nil; center are the Pneu-Rolls and delivery tubes; at the right, slim and attractive, are Robinson cyclones on the top floor of the mill, all examples of the latest in design.

EDITOR'S NOTE: One of the newest and most modern flour mills in the world is now in operation at Hameenlinna, Finland. It was built for the Finnish Cooperative Wholesale Society (Ostuustukkukauppa), more commonly known as O. T. K. The mill and accompanying machinery and structures embody the latest skills, techniques and mechanical developments of its erectors, Thomas Robinson & Son, Ltd., Rochdale, England. The following is the second of two articles, and takes the reader on a detailed tour of the Hameenlinna mill. The first article printed last month dealt with dedication of the mill and the background of its origin.

The Hameenlinna flour mill built for O.T.K. 80 miles north of Helsinki, Finland, has been termed "a model of achievement" because of the close cooperation of the owners and the milling engineers who constructed it.

The mill is on a main railway line to Tampere and the Bothnian Gulf seaports to the north, a vital factor to its operation.

One basic reason for the close working arrangement between the engineers and the owners is the fact that O.T.K. and Robinsons have been working together since 1936. In 1936 and 1938 the Robinson firm supplied two plants for mills in Helsinki.

The new mill at Hameenlinna is split into two separate sections, a flour and a rye mill. Plans call for eventual construction of a provender plant and a bakery. The existing facilities are powered partially by their own generating plant which burns wood chips from a nearby timber plant.

Now for the tour:

The silo and 12-story working house are aligned with the mill across the railway track. There are 32 main circular reinforced concrete bins in four rows of eight with 21 interspace bins, the total capacity of the group being 12,240 metric tons.

The main intake is by a 60-ton pneumatic plant withdrawing from either road or rail wagons. The luffing booms and telescopic intake pipes were specially designed to cope with the 40 ft. Russian boxcars which deliver a high proportion of the mill's wheat. The intake discharges via a receiver directly to the main intake elevators. In addition to the pneumatic intake plant there is a totally enclosed chain conveyor intake with a capacity of 30 tons an hour. It serves the twin rail tracks and road vehicles and feeds to the intake elevators.

Every elevator boot is fitted with an automatic unit which sounds an immediate alarm if a slip occurs between the belt and the terminal pulley. The unit also cuts out the motor driving the elevator. Thus the possibility of a choke is fully cared for and the danger of fire by friction is eliminated. The plant is fully interlinked, and overflow spouts come into play everywhere in an emergency.

The intake elevator feeds a 1.000 kg. tip weigher, followed by a rubble separator and a Robinson cyclo-pneumatic separator.

Secondary Intake

The 30-ton intake can, as an alternative, feed to a secondary intake, weighing and cleaning plant, consisting of a 300 kg. tip weigher and a Robinson intake separator. This plant is fed by a working bin fitted with high and low level indicators controlling the motors feeding the plant.

The 60- and 30-ton intakes feed the preliminary cleaned grain to the main bins by way of totally enclosed chain conveyors. A Robinson damper, with the necessary by-pass runs, is incorporated in the flow at this point.

The feed to every bin is monitored through a Robinson spout flow indicator, Mark II, which senses immediately if the flow fails, and cuts off preceding equipment.

The bins illustrate the latest of silo practices. Temperature recording apparatus is fitted at three positions in each bin so that temperature throughout every parcel of grain can be checked instantly from a central control point at the press of a button. Turnover runs are provided so that any parcel of wheat can be retreated on the preliminary cleaning plant when necessary. Every bin is fitted with the latest vertical ventilated system.

The turnover runs are arranged to feed a Robinson drying plant, type MOm, by way of a balance bin fitted with high and low level indicators. When the upper indicator is brought into play, a visual warning is signalled to the central control, and equipment feeding the drying plant is switched off. The lower unit also signals to controls, and triggers an alarm to the effect that "the feed to the drying plant is about to fail." The dryer feeds a second balance bin, similarly fitted with high and low level controls, but with their functions interchanged. Hot air is provided by Serck steam heaters fed from the central generating plant. Thirty-ton-an-hour outloading facilities are provided by way of a controlled balance bin feeding a check weigher. A totally enclosed, metal-cased chain conveyor carries the grain to the mill through the branch tunnel.

Pre-fabricated metal spouting is used throughout the silo. It was manufactured in Finland to specifications.

Pneu-Flow Screenroom

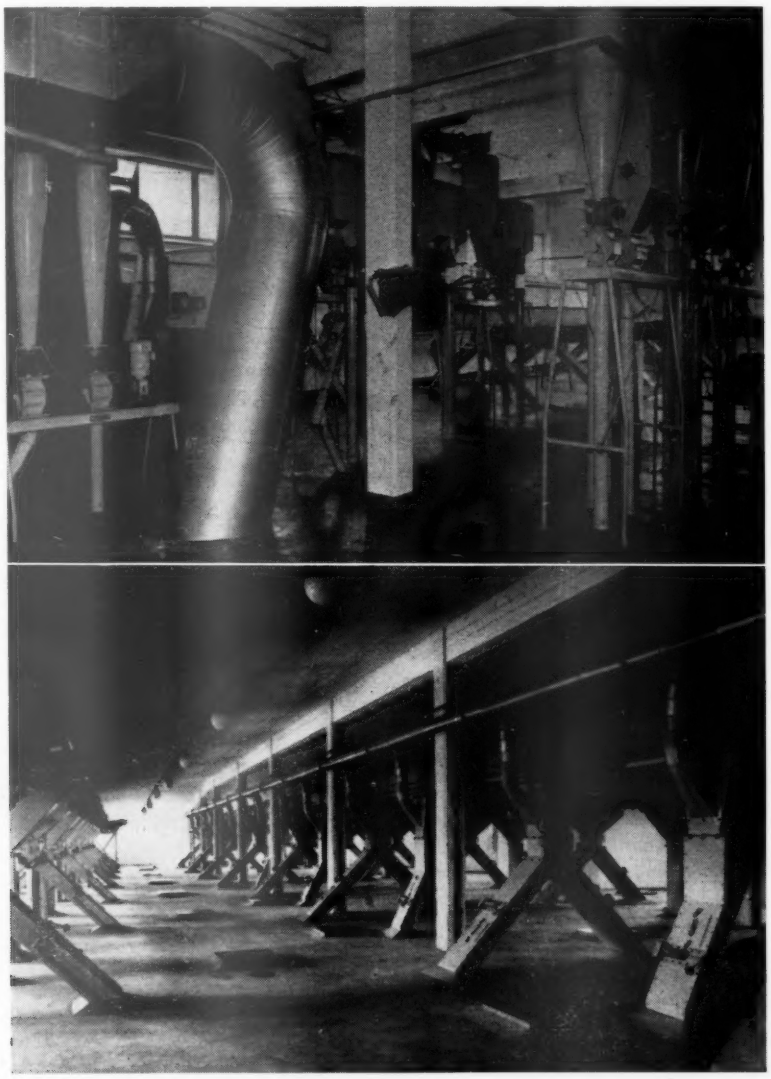
The five-ton screenroom is equipped throughout with Pneu-Flow conveying and the Pneu-Spout system.

Wheat is delivered from the silo at a rate of 30-35 tons an hour and fed to a nest of 10 dirty-wheat bins, each with a holding capacity of 60 tons. Damping can be applied by an independently metered pump controlled by the flow of grain. Grain is withdrawn by a battery of volumetric measurers and elevated pneumatically to a receiver-aspirator, type PFm, and spouted by way of a Robinson Automatic Damper to the first of the all-metal screenroom machines —the double Pneu-Separator, type PZm. This is followed by a battery of cylinders — one cockle, one re-cockle and one oat and barley, also paired with a re-treat cylinder. Small wheat from the cockle and re-cockle cylinders is retrieved by a pair of spiral seed separators and bagged off separately, or elevated to the conditioning bins. Oats and barley from the second re-treat are bagged off.

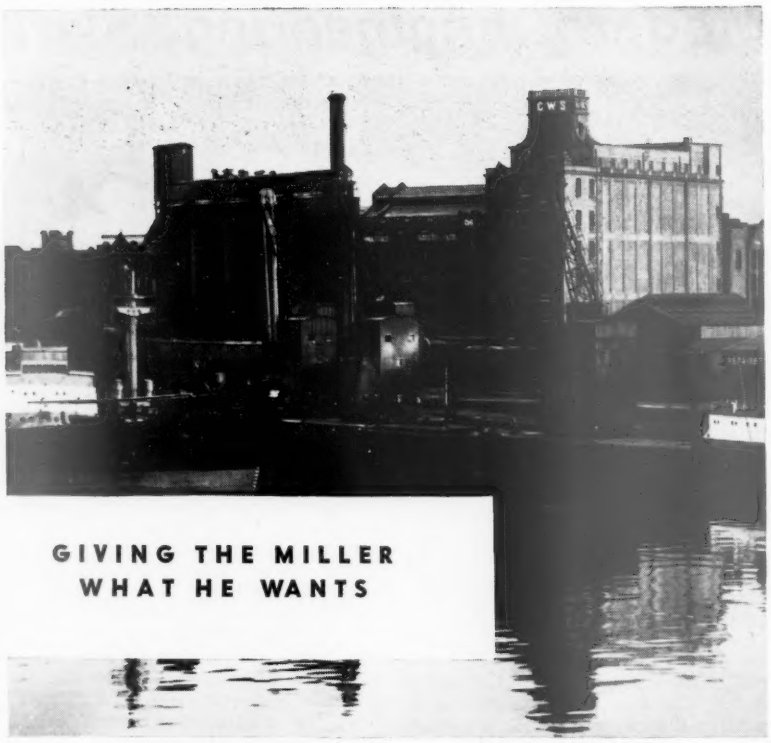
Metallic particles are removed by box magnets, and the main wheat stream passes to the second Pneu-Flow specialty machine — the type PRm scourer. A by-pass spout direct to the lifting section is provided for feeds which do not require scouring.

The wheat is elevated pneumatically to the second receiver-aspirator on the top floor, which feeds directly down to a Robinson Three-Stage Washing Plant. Moisture is added as required prior to conditioning by a Robinson type JOm Hot Air Conditioner. This machine is fed by extra-large hot air heaters specially designed for operation with the low pressure steam available from the power generating station. After conditioning, the wheat is stored in a nest of reinforced concrete bins with a total capacity of 600 tons.

From the bins wheat is withdrawn to the third of the all-metal Pneu-



STRIKINGLY MODERN—Nothing was left to chance when the O.T.K. mill was designed. Here, in the top photo, can be seen the cyclones and receiver aspirators grouped around the large cold air trunk from the screen room conditioner. The bottom photo shows the top spouting floor of the silo. Each section of spouting has a spout flow indicator.



Business as usual

From the engineer's viewpoint the ideal remodel would be one where all production ceased until his task was completed. But Robinsons appreciate the problem faced by the miller; he must keep going at all costs. Because of this they always endeavour to effect a remodel very quickly—and, most important of all, they *keep strictly to schedule.*

(Above) C. W. S. Sun Mills, Manchester, where a vast remodel has been carried out with very little interruption of normal operation.

(Right) "Pneu-Flow" Cyclone Collectors of the type installed at Sun Mills.

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Flow screenroom triumvirate, the wheat brush, type PBm, via a further battery of volumetric measurers. The flow is monitored by Robinson spout flow indicators which, in turn register the position on a central indicator board, and which trigger an alarm if the flow of wheat from any bin fails. They also stop the motor powering the feeders if necessary.

Direct-lift vertical elevation carries the wheat to the last of the receiver-aspirators which feeds to an atomizing damper. It is then spouted to a balance bin fitted with high and low level indicators—also registering on the same control panel as the spout flow indicators monitoring the flows from the conditioning bins. The balance bin, which provides a lie of approximately 2 hours, serves a 50 kg. tip weigher recording the quantity of wheat passing to the first break, by way of a final Robinson volumetric measurer and a set of box magnets.

The Big Three

The 100-ton flour mill occupies five floors of the building above the sack warehouse. Outstanding features are the absolute symmetry of the main machinery floors, the ample access provided around the machines, the simplicity of the pneumatic conveying system, horizontal conveying reduced to the absolute minimum, and the reduction of infestation risks. The saving of a floor beneath the roller floor has allowed O.T.K. to adopt the popular continental practice of embodying a spout floor between the plansifters and rolls.

The building is designed to house two Pneu-Flow units; a grilled "slot" has been provided right through the center, enabling the planners to achieve an in-line layout of the pneumatic tubes up through the center of each floor. The grilling has the effect of equalizing pressures on all floors of the mill.

As in the screenroom, the use throughout the flour mill of Pneu-Flow and the Pneu-Spout gravity system has contributed much to brightness of the floors. Color has been used throughout the plant. All gravity spouting is painted pale blue. Pneumatic tubing and equipment are cream. The machines themselves are painted in pastel shades. The rolls are finished in ivory cream and the delivery tubes above the sight glasses are painted in eau-de-Nil green. The flooring is covered in black and white marbled plastic.

Break Passages

There are 14 stands providing six break passages. The bran passages are incorporated in the Robinson "Bran Brush." There are 16 reduction stands providing five coarse and eight fine passages. On the plansifter floor are 12 of the latest Robinson Square-Sieve Plansifters of the four-section, 16-sieve pattern. Two more machines serve the rye plant. All of the machines are individually driven. The purifier floor has a complement of nine of the latest Mark III All-Metal Double Sieve Purifiers, painted eau-de-Nel. The top floor houses the pneumatic cyclone collectors, the suction filter dust collectors, and fans. Air from the suction filter dust collectors can be fed back to the mill to reduce heat losses. The axial flow fans serving the dust collectors are housed vertically in a penthouse running the length of the mill and are supported on a platform so they can be serviced by a man standing upright. Centrifugal fans are used for the high efficiency conveyance of stocks,

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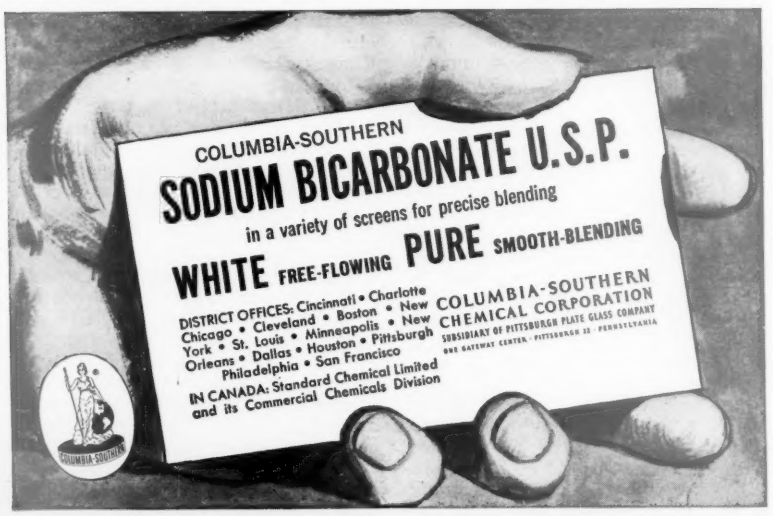
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and axial flow fans for exhausting the purifiers and the dust collectors.

Because water normally does more damage in a mill than fire, there is no sprinkler system. Instead, there is an intricate network of highly sensitive alarms backed by a 24-hour fire fighting service.

The powder feeding arrangement includes a battery of six feeders mounted at a convenient height on a stand. The powders are carried by pipe line, under pressure created by a Rootes blower, to the appropriate flour worms where they are injected as a finely divided spray into the flours.

Rye Mill

Side by side with the flour mill, and matching it in styling, layout and equipment, is a 25 to 30 ton rye plant. Cleaning is done by an all-pneumatic Pneu-Flow screenroom; five 40 in. Pneu-Rolls provide five break and two middlings passages; grading and dressing are performed on two 4-section 16-sieve plansifters.

The mill is fully pneumatic, and Pneu-Spout unit metal spouting is used throughout. Dust collection is executed by a specially designed 24-sleeve suction filter dust collector and axial flow fan, backed by a "policeman" cyclone on the pneumatic system to deal with rye fibers.

Screenings from the wheat and rye plants are conveyed to a central point and elevated pneumatically to a grading reel. Rubble is tailed off separately.

Coarse screenings are delivered by way of a balance bin to a Robinson Grinder type FNm with electronic feed control, and delivered by gravity to the original lift which returns it to the reel. Material ground to the required fineness is then passed through to the ground screenings bin and finally re-elevated to the mill offal stream. The disposal plant works on a closed circuit and no screenings reach mill offal until sufficiently reduced.

All flour leaving the mill is entoleted, weighed and pneumatically transferred to integral bulk storage bins. Separate groups of bins are provided for the various grades of flour, the rye meal and the bran, to a total capacity of 2,000 tons. Every bin is fitted with high and low level indicators so that the storage position can be seen at a glance on a central control panel.

Material from the bins is elevated to the packing section, flour first passing through the battery of two-tier Rexman Screen redressers. Full facilities are provided by the installation for turning over products from bin to bin, and for blending.

The packing equipment includes three valve packers, a small bag packer and two open-mouth bag packers for flour, rye meal and bran. A completely dust-free atmosphere is maintained in the warehouse by exhausting the bins and equipment to Robinson Filter-Type dust collectors.

The finished product warehouse has direct access to rail on the one side and road on the other. Beneath the packing, milling and cleaning sections is a long spiral-chute warehouse.

Bagged products are conveyed directly to storage chutes delivering out to road or rail. Up to 14 vehicles or wagons can be loaded at the same time.

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Safety in the Milling Plant

● By Ernest W. Fair

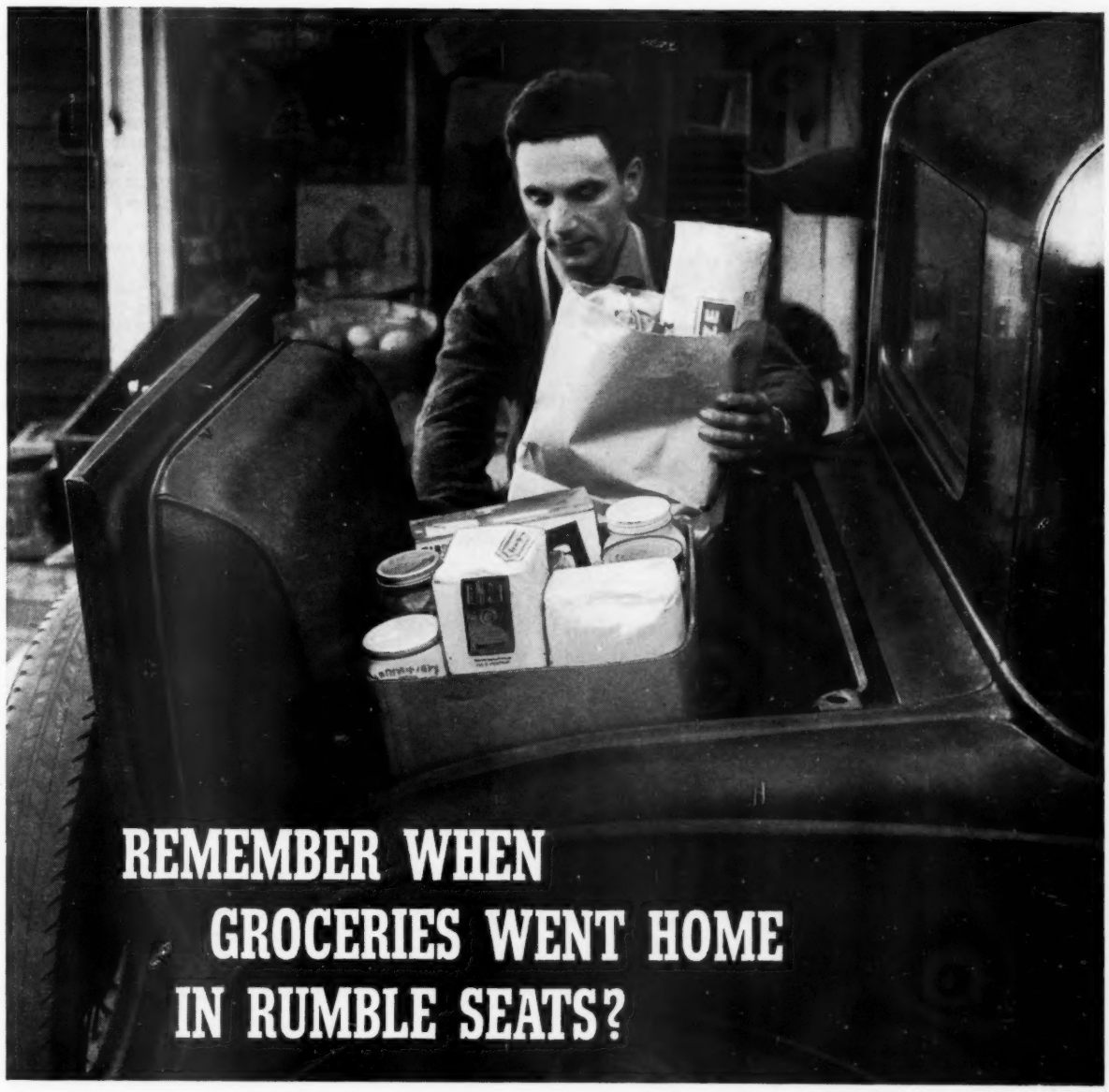
Few safety programs overlook the importance of the individual employee's actions on the job. Few ignore the need for training in proper action and motion by the employee. Far too many ignore the importance of applying safety to the equipment as well.

No piece of equipment is fool proof or accident proof. Some may have greater accident potential than others but all possess it to a degree. The safety program of the mill should therefore call for close attention to application of safety with respect to the equipment therein.

Here are presented a number of accident areas which deserve such attention. Overlooking even one can nullify all the work and effort expended on the program.

Wherever there are dangerous moving parts these should be enclosed. There should be no exceptions. Many units in the plant have such guards or enclosures as integral parts of the machinery itself but others do not. It should always be a rule that where there are moving parts some sort of substantial guard must be erected.

No such guarding or equipment placement should ever be made which will make it difficult for employees to reach parts subject to wear, adjustment and hand lubrication. All should be conveniently accessible. In some cases it will even be profitable to go to the expense of moving such units to assure this requirement is present. In others, redesign of guards or housing may provide the safe accessibility. A particular point to look



Some of those groceries would be as out of date today as the rumble seat itself! As you know, new processing methods, new packaging, new ingredients have changed many food products.

Even staples like family flour have been improved, thanks to vitamin enrichment. Today, food buyers *expect* food products to carry the "ENRICHED LABEL".

Twenty years ago, just about the time the rumble seat was on its way out, mass production of vitamins was just getting underway. One of the first companies to master the techniques of manufacturing quality vitamins was Chas. Pfizer & Co., Inc.

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for is the situation where accessories have been added which create such a condition.

Added safety can be obtained where old equipment is still in use by installation thereon of automatic and continuous lubrication systems which permit oiling while the machine is in operation. This is a feature of most modern equipment. Oiling systems are available or can easily be devised in the plant shop for the older units. This will eliminate a very prevalent cause of accidents—injuries to employees sustained while lubricating machinery in motion.

Driving mechanisms always require close examination during any safety inspection. These, too, are a frequent source of accidents. Such driving mechanisms built close to the floor must always be enclosed or shielded by heavy guards. Some plants have found it worth while to move them off floors and out of reach. Others find, in some spots, it pays to convert machines to individual drives in order to eliminate this hazard.

Another big cause of accidents in many plants has been the existence of a condition of sharp contrast between light and shadow and glare in the vicinity of the point of operation of a machine. Shadows conceal danger. Heavy contrast between light and shadow makes it difficult for the worker to see what he is doing and maintain adequate alertness.

Where any such condition is found it can usually be remedied at very little cost. One method is to install proper fixtures around such areas which do away with these shadows and provide uniform lighting around the equipment and in work areas where employees use each such piece of equipment. Another is to use paint to provide color contrast as well as kill out shadow effects.

Injuries are naturally often sustained by workers reaching into or about equipment for materials in the process of feeding or extracting from the unit. Where this is done by hand, provision of a mechanical means of doing so will always lessen the accident hazard. Provision of additional free space around such a unit in order to give the employee more room in which to maneuver is another method.

Dust and Gases

Long range hazards in the form of dust and gases should also be taken into consideration. The ill effect from these is not always readily apparent and shows up only after a considerable period of time. They are as much of an accident hazard as an unguarded high-speed machine. Where they do exist in the plant the easiest and best method of doing away with them is to provide automatic suction blowers and a duct system to carry such damaging fumes or gases outside and away from the work areas.

Noise is some times a contributing factor to accidents in the plant. Wherever it exists in excessive volume it serves to decrease the alertness of employees and increase their nervous tension. Any employee, under these two extremes of stress, is a potential accident victim no matter how well trained in safety he may be.

Reduction of such extreme noises is always possible through the erection of sound proofing partitions around such equipment, damping of the unit itself in and around its foundation and by other well known methods. The important factor is that noise as a contributing cause of accidents is generally overlooked. It should be placed high on the list in every plant and where accident prevention methods are being planned the elimination of unnecessary noise should be near the top of the list.

Excessive Vibration

Excessive vibration has the same effect. This usually results from lack of good maintenance on equipment. It should never be overlooked as a contributor to accidents in any plant.

Many accident surveys have pointed up another frequently overlooked mechanical cause of accidents. This involves machine motion itself. Any machine motion that is tiring to the eyes of the worker should be avoided as where reciprocating or revolving parts are viewed through cross screens or latticework.

Added safety can also be secured around moving parts of equipment that cannot be enclosed by smoothing the contour of such equipment. Wherever exterior shapes of any parts of the machines that require frequent handling exist they should be set up to facilitate convenience in handling.

Many accidents are caused by employees tripping or falling into machinery. These can be avoided by enclosure of such parts of the machine or by providing guard rails which will catch the individual and give him the needed second or two to regain his balance. Such a hazard exists frequently where units are crowded too closely together and there is no room for one to regain his balance should something happen. In some instances this type of accident has been reduced in such areas through compulsory routing of traffic of employees along other aisles in the plant and making the area virtually "off limits" to all but the men whose jobs keep them therein.

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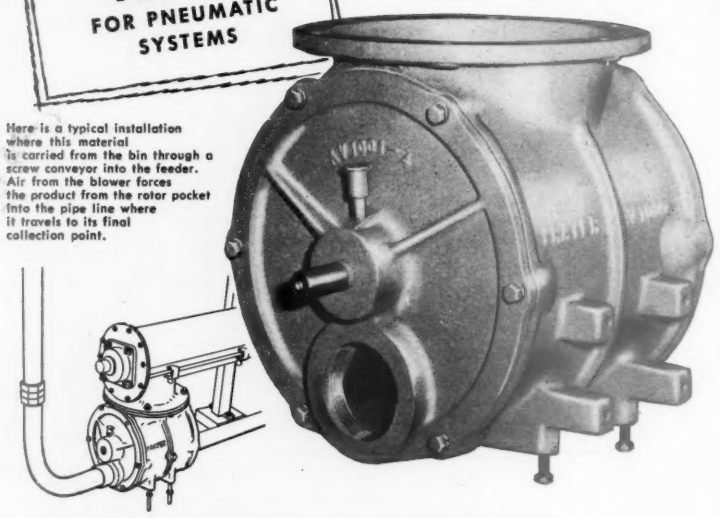

Here is a typical installation where this material is carried from the bin through a screw conveyor into the feeder. Air from the blower forces the product from the rotor pocket into the pipe line where it travels to its final collection point.

No matter how attritionized the product, this new Prater Blow-Thru Feeder will feed it efficiently and quickly into any pneumatic system. And this new design becomes an integrated part of the pipe line and will feed against pressures as high as 10 PSIG . . . either positive or negative!

One of the efficient design features of this unit is that on the horizontal center line of the body casing is a pressure neutralizing port to bring the rotor pockets to atmospheric pressure before filling.

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Spot Fumigant

GIVES FULL PROTECTION

Check These Important Points

✔ Dawson 73 is patented. It cannot be duplicated. (U. S. issues patents only on synergistic fumigant mixtures.) Which means that the special combination of ingredients has vastly superior insect killing power. The synergism of Dawson 73 is tested, proved and patented.

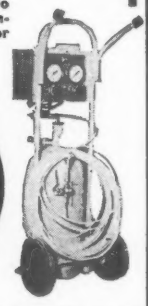
✔ Dawson 73 is the original low-dosage fumigant. Because it is powerful, less is needed and cost per treatment is lower.

✔ Dawson 73 is undiluted. It is sold at full strength. Percentage of active ingredients stated on label. Some fumigants do not state percentages. Watch your label. You get what you pay for.

APPLY EASILY EITHER METHOD

A Available in 2-inch shot can. One can equals knock-out strength of about a quart of conventional fumigant. Just punch and pour in fumigation ports now used. No handling bottles, wasted time, broken glass. No fumigant lost. Order case of 48 cans today.

B For large mills, use "Little Squirt" applicator. Two men can fumigate average mill in two hours. Cuts costs substantially. No equipment to buy. No initial investment. Ask for details.



DAWSON LOW-DOSAGE FUMIGANTS

FERGUSON FUMIGANTS

810 S. Florissant Rd.,
FERGUSON 21, MISSOURI
In Canada: Kipp Kelly, Ltd., Winnipeg and Toronto

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The
LOW DOSAGE
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Assures
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Bromotox, a mixture of ethylene dibromide and methyl bromide, is an effective, safe and economical space fumigant. The stronger odor and lower dosage requirements of Bromotox result in greater killing power, increased economy and maximum safety. It is longer lasting, more penetrating and leaves no residual odor. Bromotox allows positive control of granary and rice weevils, Angoumois grain moth, confused flour beetle, Mediterranean flour moth, raisin moth, cheese mites and many other pests infesting grain, flour, rice, cheese and dried fruits. Available in cans packed twelve per case as well as 10, 50, 120 and 170 pound cylinders.

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The Versatile Fumigant

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FERGUSON 21, MISSOURI

Federal Help May Improve Freight Car Sanitation

CHICAGO—The Federal Food and Drug Administration has set in motion plans to determine the extent to which the railroads are providing insanitary freight cars for flour shipments.

This is part of an overall program to correct the situation, according to the baker-miller committee of the American Bakers Assn. and the Millers National Federation, to whom the problem of freight car cleanliness has been of considerable concern for several years. Sopkesmen for the committee expressed an opinion that participation by the federal agency should be quite helpful.

Under the plan now worked out, mills will immediately contact the district Food and Drug offices should any of the cars they receive from a railroad for flour shipment fail to meet their sanitary standards.

——BREAD IS THE STAFF OF LIFE——

J. S. Dayett, Retired Flour Miller, Dies

WILMINGTON, DEL.—John Sherman Dayett, 90, the third generation of flour millers in his family, died Dec. 6 at Floral City, Fla., where he lived with a daughter.

Mr. Dayett was born at Chester, Del., and moved to Cooch Bridge, Del., as a boy when his father and grandfather founded the Dayett Mill there. The mill is still operating, but it is no longer part of the family interests.

Mr. Dayett purchased a flour mill at Yeatman's Station, Pa., about 1910. After his retirement he lived for a number of years at Elsmere, Del.

——BREAD IS THE STAFF OF LIFE——

Graton and Knight Outlines Plans at Sales Convention

WORCESTER, MASS.—The Graton and Knight Co., manufacturer of industrial leather products, held a sales convention with salesmen present from all over the country.

Among those who addressed the convention were: Walter W. Weismann, president; John Henrikson, sales manager; Jack P. Rattner, vice president, and Ralph S. Tyler, treasurer.

Following the two-day sessions, the salesmen were conducted on a tour of the plant. They later attended a luncheon at which city and civic officials were present. These included Mayor James D. O'Brien, Harry L. Gustafson, executive vice president of the Worcester Chamber of Commerce and Francis McGrath, Worcester city manager.

Mr. Weismann, who is also chairman of the board of the Aetna Industrial Corp. which owns the company, stated that Graton and Knight rose to be the world's largest manufacturer of leather belts and other industrial products and that he would do every thing within his power to see that the company not only maintained that enviable position but grew even stronger.

With that objective in view, Mr. Weismann outlined the following plans:

(1) Graton and Knight will modernize and expand their curry department. (2) Graton and Knight will also increase the production capacity of other departments. In fact, the company will augment many facilities by purchasing the newest type of equipment. (3) Graton and Knight is installing complete inventory and production control systems. These systems, plus other new facilities, will enable the company to give even more efficient service to its customers.

(4) Graton and Knight is installing a sales research department, for a very definite purpose—to explore every possible usage of leather and synthetic products that can be produced by the company. Eventually, this will mean the manufacture of an increasing number of new products. (5) Consideration is being given to establishing a new department to manufacture a complete line of leather packings and oil seals for the original equipment manufacturers. Previously, Graton and Knight has manufactured leather packings and seals for the replacement and maintenance markets only.

ENTOLETER®
EQUIPMENT FOR...
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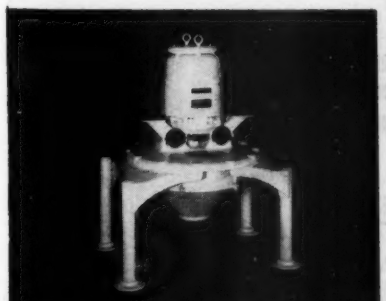
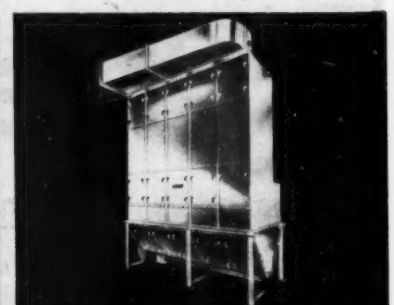
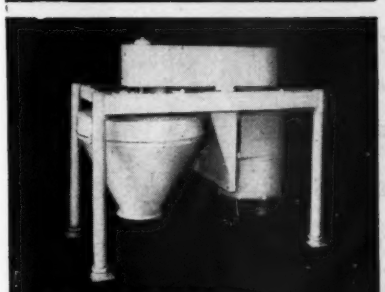
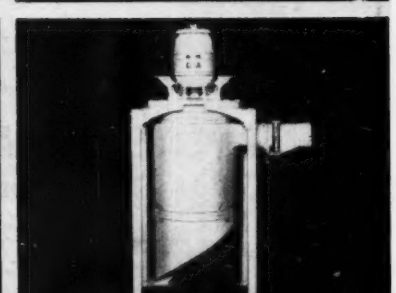
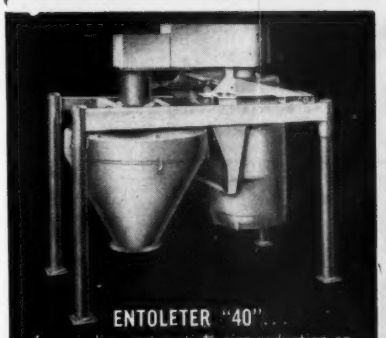
• AIR SEPARATION • DUST RECOVERY

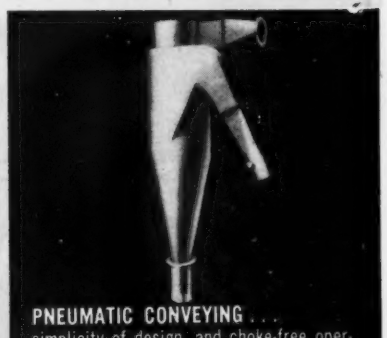

STANDARD ENTOLETER MIXER . . .
for complete dispersion of dissimilar, free-flowing solids . . . solid-liquid systems . . . liquids . . . at capacities to 8 tons per hour.


ENTOLETER-SIMON SUCTION FILTER DUST COLLECTOR . . .
the most economical, high efficiency dust recovery equipment.


ENTOLETER IMPACT MILL . . .
for centrifugal mixing or particle size reduction with belt-driven, constant speed or variable speed drive . . . in capacities up to 60 tons per hour.


ENTOLETER ASPIRATOR . . .
for separation by air, of mixtures consisting of materials of varying density or air foil.


ENTOLETER "40" . . .
for grinding and particle size reduction applications with extreme impact velocities and/or capacities to 100 tons hourly.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simplicity of design, and choke-free operation and low power requirements assure continuous efficiency.

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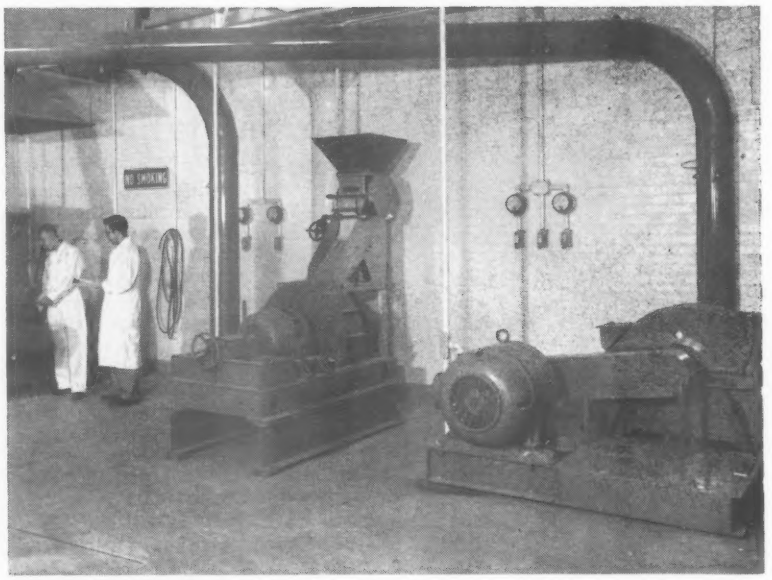
Customer Service Laboratory Opened By Strong-Scott for Processors

MINNEAPOLIS—Within the past two months the Strong-Scott Manufacturing Co., Minneapolis, has established a customers' service laboratory specifically designed to furnish chemical, food and feed processors the greatest possible assistance in solving grinding, mixing and separating problems.

The laboratory will be used to demonstrate top performance and feasibility of the various pieces of equipment manufactured by Strong-Scott. It is geared to conduct tests and to check operations using variable procedures to simulate unit operations in a number of industries.

The company laboratory is fully equipped with commercial-size machines such as an air-attrition impact pulverizer with internal air classification, a recently designed attrition mill, utilizing standard motors, and a revolutionary hammer mill which makes it possible to use hardened screens without the danger of warpage. The laboratory is equipped with dry mixing equipment for continuous or batch operation, liquid handling and for applying systems for various mixing problems. Known techniques have been applied to the basic principles of screen separation in two other machines. There is in the laboratory a number of feeding devices to handle the broad scope of different problems confronting the process industries.

This service will be performed without charge, and those wishing to use the facilities should secure a test form from the company, complete it and send it to the Minneapolis headquarters along with the material to be tested. The laboratory engineers will analyze the problem, outline the procedure, conduct the tests and furnish complete technical data on each test.



LABORATORY VIEW—A section of the new customer service laboratory of the Strong-Scott Manufacturing Co., Minneapolis, is shown in the above picture. Facilities of the laboratory are used to study and help solve problems of feed processors who furnish samples of the material to be tested to Strong-Scott.

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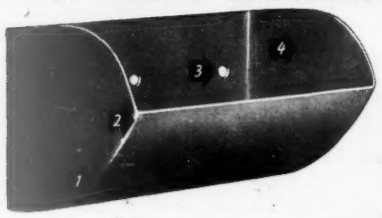

Your jobber has them, or write B. I. Weller Company, 327 South LaSalle Street, Chicago 4, Illinois.

(1) The logarithmic curve design loads easier . . . dumps cleaner . . . permits high speeds.
(2) Scientifically formed lip aids in greater cup capacity.
(3) Bolt-hole placement gives better cup balance . . . saves belting.
(4) Hyperbolic sideboard ends permit greater load capacity without "slopping."

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Your Best PROTECTION
Against STORED GRAIN INSECT LOSSES IS INDUSTRIAL

● WHERE SERVICE BACKS THE SALESMAN

INDUSTRIAL Fumigant Company
923 STATE LINE KANSAS CITY, MISSOURI

MILL EFFICIENCY

(Continued from page 17)

and give him more time for actual managing.

Adequate office facilities may add greatly to the over-all efficiency of the elevator work. A conveniently arranged private office is greatly appreciated by customers and is especially advantageous to management. Offices should be planned to facilitate display, give customer service, allow management access to personnel supervision and minimize office dust, noise and traffic congestion. You should plan at least a good compromise of these.

Receiving: In the job of receiving feed for grinding and milling, the unloading operations were the most important. They accounted for about 32% of receiving time. (See accompanying table.) Thirty different elements were involved in the usual receiving procedures. Total standard time requirements for this work amounted to 7.6 min. The unloading took 2.4 min., nearly one third of the time, and the delay for grinding took 1.4 min., nearly 20% of the time. The main differences in efficiency of methods here which were noticed were between the use of wheel hooks and a cradle-type hoist. Unloading with wheel hooks took nearly 50% more time than with the cradle-type hoist—2.4 min. per load with the wheel hooks and 1.6 min. per load with the cradle-type. Not only did the wheel hooks take more time in unloading, but the chance of damage to fenders was considerably increased with the wheel hooks. A few elevators have installed an overhead safety cutoff switch for hoists to prevent lifting truck cabs high enough to damage them.

All sizes and kinds of loads received for grinding and mixing make it important that receiving facilities be flexible. If the receiving facilities for grinding and mixing are separate from that used in receiving grain for storage, much delay is eliminated. The need for coordination of receiving facilities is illustrated by the fact that 29% of the receiving time was spent in delays. This did not include the long waits between loads.

The size of the dump pits turned out to be an important factor in receiving grain for grinding and mixing. Many dumps were too small. This not only required more time for the actual unloading operations, but greatly increased the amount of sweeping that had to be done around them. Some new elevators have very small dumps. Sweeping time accounted for 6% of the time for receiving. Even some of this sweeping was unnecessary. However, for the necessary sweeping around dumps, a good broom should be permanently located near the dump. Many of the brooms we saw were labor wasters because they were either too small or worn out, and in many instances we observed the workers having to hunt for some time in order to locate the broom. Dump openings could be large enough to eliminate most of the sweeping, and the dump capacity itself should be large enough to minimize delays.

Repair or remodeling of conveyors in the dumps could eliminate some of the time spent in punching the grain down. Our records showed that this operation alone—just punching the grain down into the conveyor—took about 9% of the entire receiving time. Chains can be set at an incline or a larger auger can be used to eliminate this problem.

Two other arrangements seemed to improve the receiving operation. These were arranging the spout so that it could be changed from the ground floor and keeping the switch arrangement as compact as possible. Of course, the sheller, drag and elevator switches should be located near the most frequently used dump.

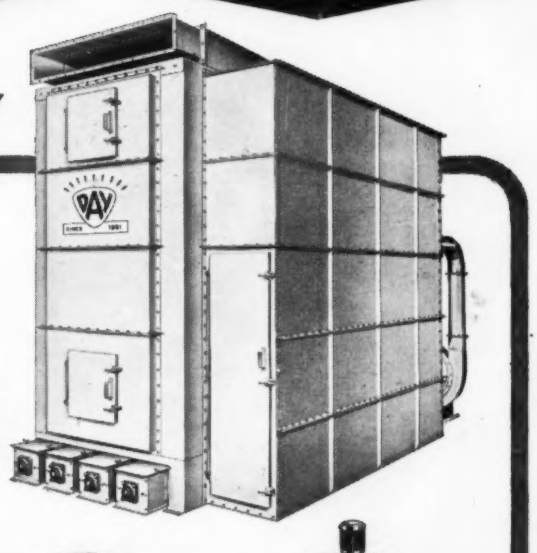
Grinding: The grinding operation

(Continued on page 17a)

EDITOR'S NOTE: Most mill and elevator operators know that they can make their business more profitable in one or both of two ways—by expanding their sales volume or reducing their costs of operation. While suggestions for expanding sales are plentiful, not a great deal of advice on how to operate more efficiently in order to reduce operating costs is available. This situation exists because studies of mill operations have been relatively few and far between. However, some recent research conducted by the Department of Agricultural Economics at Purdue University provides a great deal of basic information on this subject, and as a result of the studies specific recommendations to mill operators are possible. The studies were conducted under the direction of Dr. Charles E. French, associate professor of agricultural economics, with the cooperation of the Indiana Feed & Grain Dealers Assn., Inc., and the Indiana Farm Bureau Cooperative Assn., Inc. Dr. Farris, co-author of the accompanying article and an extension economist in marketing at Purdue, has discussed the subject at recent feed conventions. Purdue University AES Bulletin 639, available from the Mailing Room, AES, Purdue University, Lafayette, Ind., contains additional detail on this study.

DUST CONTROL | BULK STORAGE | PNEUMATIC CONVEYING

DAY PRODUCTS
SERVE THE MILLING INDUSTRY



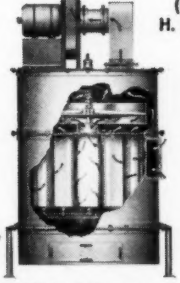
...CONTROLLING DUST

DAY "AC" Reverse-Jet DUST FILTER ● Dollar for dollar, feature for feature, you get more for your money with a DAY "AC" filter. Economical first cost and low maintenance PLUS the fact sub-assembly by DAY saves up to 75% on installation costs. ● Felted filtering media captures sub-micron dust particles with 99.99+% efficiency. Media porosity is maintained by self-adjusting, high pressure, reverse-jet blow rings. ● DAY filters occupy less floor space—need less headroom—are furnished to operate on suction or pressure. ● May be installed inside or outside; outside units completely weatherproof. Write for Bulletin 559 for complete facts and engineering data.

DUAL-CLONE DUST SEPARATOR

Exclusive DAY design provides high efficiency with low horsepower requirements. Write for Bulletin 49DC.

(Licensed by H. J. Hersey, Jr.)

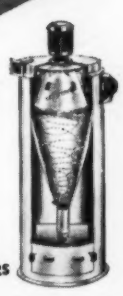


TYPE "RJ" DUST FILTER

Surge of high velocity reverse air maintains filter media porosity of this "packaged" dust filter. 99.99+% efficiency. Write for Bulletin 560.

TYPE "C" EXHAUST FANS

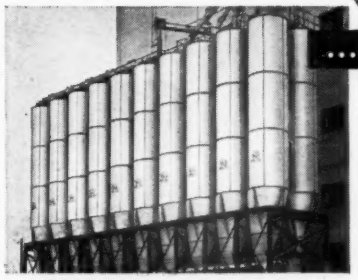
High air delivery per horsepower required. Statically and dynamically balanced; designed exclusively for dust control applications. Write for Bulletin 471.



DAY UNIT DUST CONTROLLERS

Complete, low cost unit combines high efficiency of DAY Dual-Clone and Exhauster. Ideal for remote locations. Write for Bulletin 510.

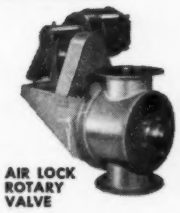
A SINGLE UNIT OR A COMPLETE DUST CONTROL SYSTEM



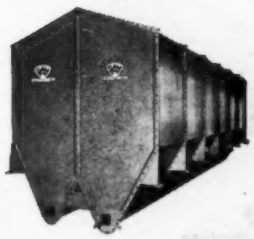
DAY Vertical Type Bulk Storage Bins

...HANDLING AND STORING BULK MATERIALS

Vertical or horizontal bins, special sizes or groups furnished to meet production needs; air lock rotary valves, twin screw feeders and other auxiliary equipment optional. DAY bins need no field riveting, soldering or welding. Built and shipped in easily erected bolted sections. Write for Bulletins 529 and 549.



AIR LOCK ROTARY VALVE



HORIZONTAL TYPE BULK MATERIAL BIN

INDIVIDUAL BULK EQUIPMENT UNITS OR A COMPLETE BULK MATERIAL SYSTEM

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DAY Pneumatic Conveyor equipment and systems provide a modern method of bulk material handling. Self-cleaning to prevent contamination or product deposits in system. Speed of operation improves plant efficiency. Write for details.

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Victor announces the BIG N

THE CHART shows that seven women out of ten who use self-rising flour prefer it to plain flour because of more successful baking and convenience—just a part of the five strong merchandising appeals you'll find in *Futures*.

NEWS about self-rising flour!

7 OUT OF 10 WOMEN

WHO USE SELF-RISING FLOUR

PREFER IT

BECAUSE OF MORE SUCCESSFUL BAKING AND CONVENIENCE

No other baking product received such strong endorsement from housewives in Victor's current survey of southern baking habits.

Successful baking and convenient use are among the strong appeals turned up in this study. Ask your Victor Representative to show you the report of complete findings called FUTURES. It not only shows all the facts and figures, but shows how you can increase your sales of this product that has a loyal following – a tremendous potential.

5 BASIC APPEALS TO THE HOME-BAKER

These are the five keys to a big, big market. *Futures* shows you what they are . . . why they are important . . . how to use them to get a bigger share of the tremendous potential for your self-rising products.

You'll want to see the whole story – see your Victor Representative for your copy of FUTURES. Or if you want a copy *now*, by return mail, write to: Victor Chemical Works, 155 N. Wacker Drive, Chicago 6, Illinois.

VICTOR
Dependable Name in Chemicals
for 59 Years

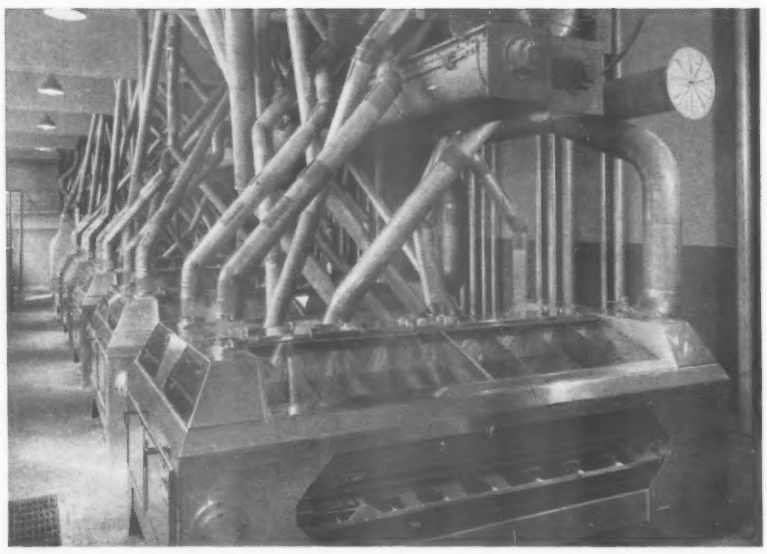
THE RISE IN SELF-RISING PRODUCTS

Terminal Flour Mills Superintendent Named

PORTLAND—Glen F. Gabbert has been appointed general superintendent of the Terminal Flour Mills Co., Portland; Spokane Flour Mills Co., Spokane, Wash., and the Mark P. Miller Milling Co., Moscow, Idaho. Henry F. Schmitt, president of Terminal Flour Mills, announced the appointment. Mr. Gabbert comes to Portland from the Colorado Milling & Elevator Co., Denver, where he was assistant general superintendent.

Robin Hood Fund

MONTREAL—William J. Henning, vice president, Robin Hood Flour Mills, Ltd., has announced that the company's profit sharing fund for retirement, death and severance benefits now is represented by $537,000 from profits contributed by the company in the past four years and $199,000 from employees' savings. To date $52,000 has been paid out. A typical participant with average earnings and average years of service now has a $1,260 profit sharing account.



PURIFIER FLOOR—This battery of all-metal Simons Type S purifiers is part of the modern equipment installed in the new California Milling Corp. flour mill at Los Angeles.

Warehouse Labor Costs Analyzed in Research Report

WASHINGTON—Warehouse operators reduced labor costs 19% in five small one-floor and four multi-story warehouses through the application of labor-saving methods developed by marketing researchers of the U.S. Department of Agriculture. A report evaluating present warehouse methods and developing new labor-saving methods has been issued by USDA.

After analysis of present warehousing methods, suggested improvements were put into practice in nine firms. Increased labor productivity, and thus lower labor costs, was achieved. Additional manhour savings of 36%, for a total of 55%, can be expected after new facilities are constructed in four firms and recommended equipment is installed and in operation in three other firms, the researchers say.

In four firms, separating the palletizing operation from the forklift storing operation saved 115 manhours weekly. Improved work methods reduced the number of manhours in the receiving operation by more than 8%. The researchers found that using four-wheel handtrucks, instead of those with two, increased productivity in order filling more than 37%.

Based on the total warehousing operations of the firms studied, researchers found that a conveyor system was the most efficient materials-handling equipment in multi-story warehouses.

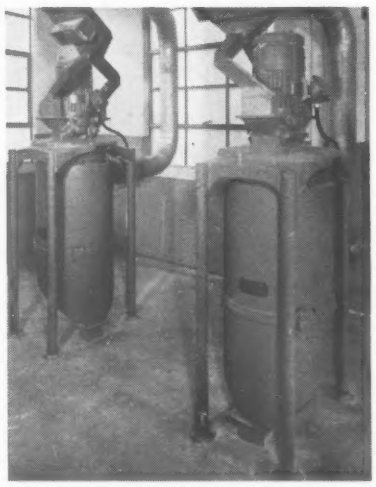
This report also analyzes, through case study, the problems involved in determining whether a new warehouse or new equipment should be acquired.

A copy of this report, "Methods of Increasing Labor Productivity in Multi-Story and Small One-Floor Grocery Warehouses," Marketing Research Report No. 142, may be obtained from the Office of Information, U.S. Department of Agriculture, Washington 25, D.C.

—BREAD IS THE STAFF OF LIFE—

CEREAL USE UP

CHICAGO—According to a survey conducted for the Cereal Institute, Inc., the per capita consumption of breakfast cereals has increased for five consecutive years.



ASPIRATORS — Entoleter Scourer Aspirators have been installed in the mill.

NEW MILL

(Continued from page 1a)

and his son Frank Viault, Jr., is president. In immediate charge of the milling operations is Clifton B. Capps, executive vice president and general manager, who says of the new plant:

"When we decided to build this mill we realized that such a proposal could only be justified by improved extraction and economy of labor. We have already established quite clearly that we have achieved our aim."

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Storage Mold Causes Sick Wheat, Researchers Say

CINCINNATI, OHIO — Proof that storage mold causes sick wheat in grain elevators was reported here last week by a University of Minnesota scientist.

B. C. Papavizas, a university plant pathologist, explained the research at the annual meeting of the American Phytopathological Society, Dec. 6-8.

"Sick wheat" is a condition that occurs in the germ of the wheat kernel and causes the germ to turn dark brown. It reduces the grade of wheat for milling because the dark germ causes a rancid flavor in flour.

Before now, it wasn't definitely known what caused "sick wheat," the university stated.

Some researchers suspected that it was due to something in the kernel itself, or that it was a result of something that happened to the wheat before it was stored.

In the research studies, Mr. Papavizas and C. M. Christensen, professor of plant pathology, compared stored samples of mold-free wheat with wheat samples that were inoculated with several species of storage mold fungi. All samples were then stored for periods ranging from 2-7 months, at moisture contents that permit development of sick wheat and which are commonly found in stored wheat.

At the end of the storage period, there was no sick wheat in samples that were fungus-free at the start. But there were many "sick" kernels in the samples that had been inoculated with storage mold.

Other research by Minnesota plant pathologists and agricultural biochemists has shown that storage molds won't affect wheat germs unless the moisture content is above 13%.

These findings will be important to storage elevator owners and to the flour milling industry, Mr. Papavizas said. By testing grain for storage molds it will now be possible to determine how long wheat can be safely stored and what storage conditions will be necessary to avoid "sick wheat."

—BREAD IS THE STAFF OF LIFE—

District 13, AOM, Elects Officers

Election of officers, talks, a mill visit, open discussions and a banquet highlighted a recent two-day meeting of Canadian Prairie District 13, Association of Operative Millers, at Saskatoon, Sask.

The officers elected are T. W. Jackson, Quaker Oats Co., Ltd., Saskatoon, chairman; E. F. Sinclair, Ogilvie Flour Mills Co., Ltd., Medicine Hat, Alta., vice chairman; A. Giesbrecht, Soo Line Mills, Ltd., Winnipeg, treasurer; J. T. Wimbush, Kipp Kelly, Ltd., Winnipeg, secretary. C. S. Fisher, Saskatchewan Wheat Pool Flour Mill, Saskatoon, was reelected an executive committeeman for a three-year term.

The members were welcomed to the meeting by H. L. Tingley, plant manager, Robin Hood Flour Mills, Ltd., Saskatoon. The group toured the Robin Hood mill during the afternoon.

Speakers during the first day of the meeting included Donald S. Eber, AOM executive secretary, Kansas City; C. R. Moor, Buhler Brothers, Ltd., Toronto, and J. Reynolds, Saskatchewan Wheat Pool Flour Mill. The banquet was arranged by the Quaker Oats, Robin Hood and Saskatchewan mills.

The speakers during the second day of the meeting were J. T. Wimbush, Kipp Kelly, Ltd.; Dr. C. C. Lee, University of Saskatchewan, and Mr. Fisher.

—BREAD IS THE STAFF OF LIFE—

Pillsbury Employees Share $1,000 Award

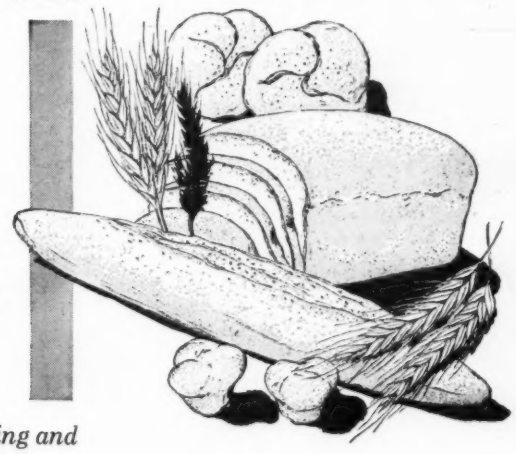
MINNEAPOLIS — Angelo Colantino, head packer mechanic, and Peter Sirtout, packer mechanic of the Pillsbury Mills, Inc., plant at Springfield, Ill., shared a $1,000 suggestion award for an idea to improve flour packaging. This is the largest suggestion award ever given at the Springfield plant.

The two men suggested improvements on a 25-lb. flour packaging machine which resulted in a better seal and better shaped package. Their suggestion also substantially reduced bag breakage during the packing operation.

Mr. Colantino has been with Pillsbury for 26 years and Mr. Sirtout has 20 years of service. Each has previously won a number of smaller suggestion awards.

Advertisement

FLOUR FOR MAN'S BREAD*



A Brief History of Milling and Baking by SCIENCE WRITER

CHAPTER XIV. *New York State's Milling Cities*

Travelin' On The Erie Canal

Begun in 1817, finished in 1825, the Erie Canal from the Hudson River to Lake Erie in New York State was a brilliant success.

As early as 1822, flour was travelling eastward from Rochester on its way to New York City. By 1826 shipments increased to 50,000 barrels to the east by way of the canal.

Rochester—Heart Of New York State's Granary

Until about 1830 all of Rochester's flour was ground from locally-grown wheat. Five years later the falls of the Genesee River at Rochester were harnessed for power through Brown's Race. Mills increased in number and size and production rose to 460,000 barrels. During the first half of the Nineteenth Century milling thrived in upstate New York. While the number of mills in Rochester declined during this period, production increased because millers aimed for complete mechanization and greater capacity.

Buffalo—Western Terminus Of The Canal

Buffalo on Lake Erie was laid out in city lots during 1803-04 on behalf of the Holland Company, the Dutch banker-owners of the land. It was deficient as a port, however, because it did not have a satisfactory harbor. Samuel Wilkinson, recognizing this shortcoming, was largely responsible for building a breakwater.

The new breakwater convinced the Erie Canal commissioners that Buffalo should be the western terminus. Feverish expansion followed and Buffalo boomed. Freight traffic on the canal to the east was light, however, until 1828, when 2500 bushels of wheat reached Buffalo from Maumee, Ohio after which wheat and flour receipts from the west soared.

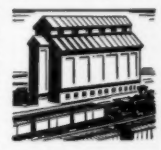
Grain Receipts at Buffalo			
Year	*Million Bu.*	*Year*	*Million Bu.*
1841	2	1861	60
1852	20	1880	100
		1898	200

The Steam-Powered Grain Elevator

About 1845, Joseph Dart built an elevator at Buffalo, powered by steam, to transfer grain from lake ships to storage. This development contributed much to the growth of the city as a great inland port.

New York City—Flour And Grain Market

Since early colonial days, New York City had been an important flour and grain market. Until 1870 the inland millers shipped their flour to exporters in New York who, in turn, sent it to large London merchants on consignment. New York's lead as a major port, helped immeasurably by the Erie Canal, was increased as railroad systems began to fan out to the west.



As the golden grain flooded in from the western lands, New York state held the lead in flour production until 1890 when first place passed to Minnesota.

Better Flour . . . Better Bread . . . Better Health

Most Americans want fine *white* bread to eat, fine *white* flour to use in home cooking and baking. Millers and bakers, too, want *white* flour because it stores and bakes well. To make this fine white flour millers are obliged to mill out portions of the grain containing some of the wheat nutrients, among which are valuable vitamins and minerals. Important among these are vitamin B_1, vitamin B_2, niacin (another "B" vitamin) and iron, all of which are restored to white flour or white bread through enrichment.

Enrichment celebrates its 15th Anniversary this year. Doctors and diet experts have applauded the practice from the very beginning. Enrichment has contributed to better health for untold millions. Bakers and millers should be proud of their part in making enrichment such a success.

This is one of a series of articles which is being published in professional nutrition and dietetic journals, and which will be widely distributed for educational purposes. Reprints of this and all previous chapters are available without charge. Write to the Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, New Jersey. In Canada: Hoffmann-La Roche Ltd., 286 St. Paul Street, West; Montreal, Quebec.

The next chapter Titled: "The Middle West Becomes a Grain Empire" will be published soon.

*This is the title of a definitive history of milling by John Storck and Walter Dorwin Teague, published by the University of Minnesota Press at Minneapolis and copyrighted by the University of Minnesota. It is used with permission as a source of material for this series of advertisements.

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Sharples Introduces New Dry Powder Classifier

By Paul L. Dittemore
Northwestern Miller Editorial Staff

The Sharples Corp. of Philadelphia recently took the wraps off a machine which should excite the curiosity of flour milling technologists. The machine, described in Sharples literature as an optimum air vortex classifier, is claimed to make possible high efficiency, high capacity separation of fine powdered materials, ranging from flour to industrial abrasives, into two fractions. The cutpoint, it is claimed, will not vary between runs and the cutpoint is maintained throughout the classification zone by means of converging specially shaped plates which increase the air velocity as the air progresses from the outside to the inside of the classification zone.

The Sharples machine, named the "Super Classifier," is designed to classify particles in the range of 10 microns to 125 microns, average size, depending upon the specific gravity of the material.

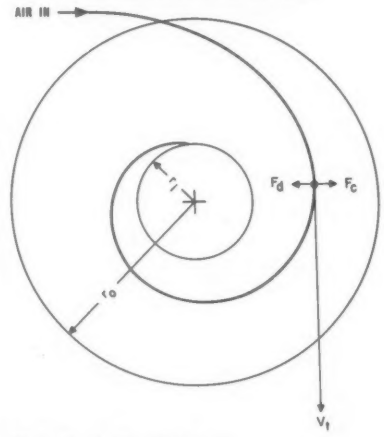
Technical details regarding the construction and principle of operation of the Super Classifier are available in a bulletin published by its manufacturer and therefore will not be duplicated in this article. Any reader wishing a copy of the bulletin for his files may obtain it by addressing a request to the editor of Milling Production, specifying Sharples Bulletin No. 1280. The bulletin includes a two-color "cut-away" picture illustrating the flow of the material being processed, which is essential to a complete understanding. This discussion will then be concerned with the application of the machine, rather than with all of the technical details of operation.

For comparative purposes, the average aperture in 12XX bolting silk is 110 microns and 16XX silk has an aperture size approximately 80 microns.

A member of the Sharples research laboratory staff said that some

• • •

The Air Vortex Principle Of Classification



Fc—Centrifugal Force
Fd—Drag Force
Vt—Tangential Velocity
ro—Outside Radius — Classification Zone
ri—Inside Radius — Classification Zone

In air vortex classification, air enters a centrifugal chamber from the outside diameter and follows a spiral or vortex path until it is discharged through an opening nearer the center of the chamber. Owing to its tangential velocity, Vt, which is the velocity of the air under ideal conditions, a powder particle will be subjected to a centrifugal force, Fc, tending to move it to the chamber wall. The centrifugal force will be opposed by a drag force, Fd, induced by the radial inflow component of the airstream.

The centrifugal force on the particle varies as the cube of its diameter, while the drag force varies as the first power of its diameter. Thus, if the particle is large enough, centrifugal force Fc, will move it outward, and if it is small enough, drag force, Fd, will move it toward the center. If forces Fc and Fd are equal, the particle will move in a circular orbit. This equilibrium condition determines the cutpoint in an ideal classifier. All particles larger than the equilibrium size will move to the outside, and all particles smaller will move to the inside. Therefore, a powder is readily divided into coarse and fine fractions at a predetermined cutpoint by directing the particles into a suitable collecting system.

SIFTING
IS SOMETHING MILLERS UNDERSTAND

COSMETICS
ABRASIVES
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For many, many years millers have been grinding grain into fine flour and sifting it so that it would be of a more uniform, even quality.

It was inevitable that the miller should become the recognized authority on sifting and that is why, when an industry has a sifting problem, it studies the miller's methods.

Be it salt, abrasives, metal-powder or pharmaceuticals, the miller leads them to the sifting textile that has been his stand-by for over a century, SWISS SILK.

SWISS SILK has made a name for itself in every industry that demands fine sifting . . . a reputation for dependability, long wear, uniformity and economy . . . qualities which have earned it the miller's stamp of approval.

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PASSAGE — After powders are passed through the Sharples Classifier's classification zone, the fine fraction is carried by the exhauster air stream to a collector; the coarse fraction is carried out through the air lock of the classifier, from which it is either returned to the mill for regrinding or is collected as product.

work had been done with the classification of wheat flour and that "satisfactory" results were obtained with 25 microns as the cutpoint.

The machine is available in four sizes with capacities ranging from approximately 1,000 lb./hr. to 30,000 lb./hr. The price tag on the 10,000 lb./hr. machine is $25,000. Accessory equipment, including an air pump, vibrating feeder, instrumentation, etc., probably would add $15,000 and the cost of installation another $15,000, bringing the estimated cost of the machine, installed, to between $50,000 and $60,000.

A price tag of $25,000 on a machine which occupies no more floor space than an office desk probably will cause milling technologists to give out with a shrill whistle or a low moan.

But before rejecting the idea of air vortex classification, some thought or investigation should be devoted to the returns that might accrue as a result of the installation and operation of the machine.

An occasional reference is heard amongst cereal chemists and milling technologists on the relationship between flour particle size and the baking performance of those flours, particularly cake flours.

Size Relationship

Frank W. Wichser, J. A. Shellenberger and R. O. Pence of the Department of Milling Industry, Kansas State College, were authors of an article, "A Study of Flour Graduation," published in the October, 1947, issue of Milling Production. Their work dealt with bread flours and in discussing the relationship between particle size and baking performance, the authors stated:

"The largest flour particles (125-150 microns) had the lowest protein content and produced shell-topped bread of poor volume and appearance. The smallest flour particles (46-53 microns)) produced bread of largest volume with good grain and texture and excellent color . . ."

In a report published in Milling Production for July, 1948, Mr. Wichser and Dr. Shellenberger said, with reference to the significance of particle size:

"Practical implications from this study are great. Through an understanding of the trend of characteristics shown by the different sizes of flour particles produced from various classes of wheat, it is possible to change physically and chemically the behavior of flours by particle size substitutions in such a manner as to advantageously control the finished products."

Tests Conducted

Scientists in the research department of the Sharples Corp. admitted that a series of tests had been conducted in the Sharples laboratories for several milling companies. They declined, however, to identify the milling companies involved and they were equally vague about the cutpoints employed.

The Kansas State researchers quoted above pointed out in their articles that the throughs of a 16XX silk bolting cloth included flour particles varying in size from 1 micron on up to 80 microns—the aperture size of a 16XX silk. They also demonstrated that "it is possible to change physically and chemically the behavior of flours by particle size substitutions in such a manner as to advantageously control the finished products."

Air vortex classifiers probably are not going to replace conventional sifters in flour mills. The application of the Sharples or similar classifier, rather, will be in the "refinement" of flours after the preliminary classification has been done by the sifter.

One Separation

A machine with a capacity of 10,000 lb./hr. would be of sufficient capacity to handle the straight flour output of a 2,400-sack mill if but one separation were to be made on the straight flour. Other separations can be made, but it would be necessary to change the vanes in the machine since the stock fed into the classifier

(Continued on page 18a)

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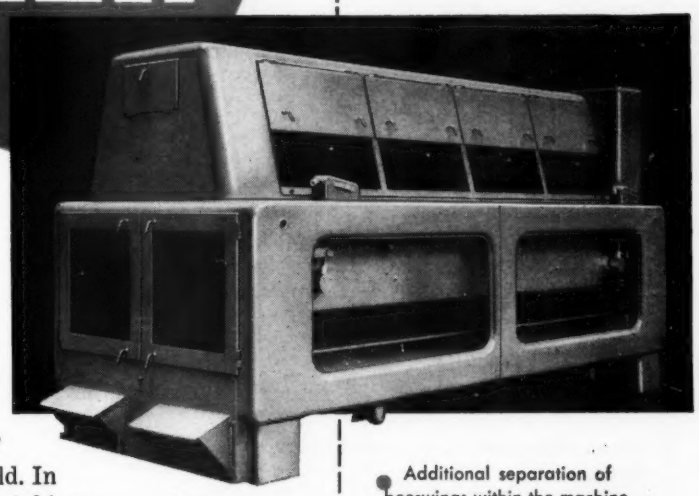

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- Up to 6 separations for each inlet (half machine) are possible —3 tailings plus 2 or 3 cuts of the throughs.
- Fluctuations in mill flow caused by variations in wheat quality and its preparation can be observed and re-adjusted immediately.
- Sieves exchangeable while machine is running and operating.
- Additional separation of beeswings within the machine reduces stocks in dust collector system.
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Replacements of conventional purifier systems by Buhler triple-deck all-metal machines are producing striking results in mills all over the world including North America.

Many installations have paid for themselves in less than a year through better extraction of low ash content flour.

Such records have established the "Buhler" as the standard purifier throughout the world. In North America, more and more millers are taking a long look at their present purification systems, and a quick look at Buhler methods. Comparisons show Buhler's outstanding superiority. And you get a beautiful piece of machinery that is a credit to the appearance of any mill.

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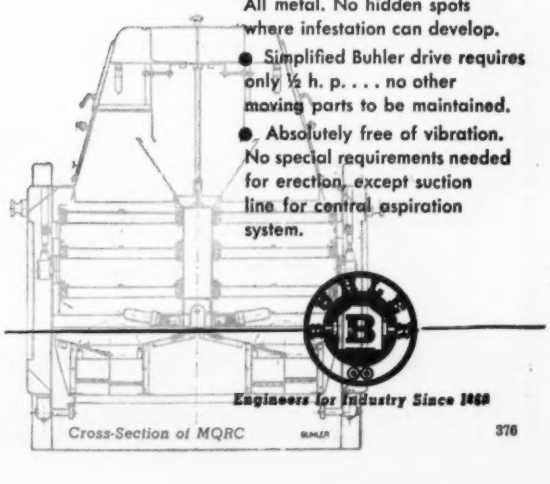

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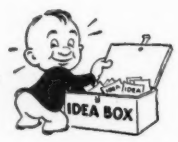

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New Literature

This reader service department announces the development of new and improved products, new services and new literature offered by manufacturers and suppliers. Claims made in this department are those of the firm concerned. Use the accompanying coupon to obtain the desired information.

No. 4065—Pallet Unloader

A new automatic pallet unloader, developed by the Alvey Conveyor Manufacturing Co., is illustrated and described in detail in a new engineering bulletin just issued. Called the Alvey De-Palletizer, the machine is designed to receive pallet loads of cases and automatically unload each pallet onto a conveyor line. The cases move away from the load individually, in single file, at a rate of 25 to 30 cases a minute. The incoming line of the unit, on which the loaded pallets are deposited, usually by lift truck, may be custom-designed to specific installation requirements. Secure more complete details by checking No. 4065 on the coupon and mailing it.

No. 4067—Swivel Nozzle

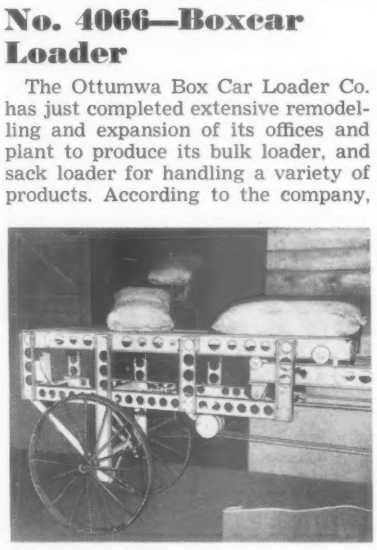
A swivel nozzle, designed to augment the pneumatic loading of Airslide cars, bulk vans, and Truck-A-Bins has been announced by the Fuller Co. The nozzle consists of a bent aluminum tube approximately 2 ft. long and 3 in. diameter, fitted into the center of a standard or custom designed aluminum hatch cover. Equipped with a rubber gasket, the hatch cover, when fitted to the hatch, is said to provide an air-tight seal, preventing the escape of bulk material being loaded into the transport unit. According to the manufacturer the swivel nozzle enables the loader to get the maximum amount of material into the vehicle and evenly distribute the material within. Secure complete details by checking No. 4067 on the coupon and mailing it.

No. 4068—Pneumatic Unloader

Sprout, Waldron & Co., Inc., is manufacturing the "Portaflow," a new portable unloader which attaches to the outlet of Airslide cars and which conveys flour and many other dry materials to storage or implant process. Company officials say that this all-weather, portable unloader is of rugged construction with the complete assembly mounted on an aluminum frame and is designed to give near perfect balance over its wheels. The unit weighs 1,045 lb. A variable speed drive which makes possible a mechanical adjustment in the feed rate from the outlet of the Airslide cars is provided. This feature insures a constant rate of flow into the bulk delivery bins or into bulk trucks for eventual transfer to bulk bins, it is claimed. Secure more complete details by checking No. 4068 on the coupon and mailing it to this publication.

No. 4066—Boxcar Loader

The Ottumwa Box Car Loader Co. has just completed extensive remodelling and expansion of its offices and plant to produce its bulk loader, and sack loader for handling a variety of products. According to the company,



a new unit, of aluminum construction, will load a boxcar in less than an hour, eliminating the need for trucking, carrying or lifting. One man manages the entire loading operation, it is claimed. Advantages of the loader are explained in a new four-page folder offered by the company. Secure it by checking No. 4066 on the coupon and mailing it.

No. 5612—Temperature Indicator

A new portable grain temperature indicator is being offered by the Seedburo Equipment Co. Called the Test-Tell, it consists of a calibrated meter for direct reading of temperature through a 6 ft. probe, which can be lengthened by adding 3 ft. extensions. The indicator, complete with 12 ft. probe, weighs 12 lb. Designed for spot checking by hand, it records accurately heat areas which may indicate insect infestation, concentration of trash and foreign matter, or high moisture spots which cause spoilage and loss of grade or of the grain entirely, according to company officials. It reacts to each temperature change within 30 seconds. For additional information check No. 5612 on the coupon and mail it to this publication.

Also Available

The following new products have been described in previous issues and information about them may still be obtained by jotting the appropriate number on the coupon and forwarding it to this magazine.

No. 3833—Package tying machine, B. H. Bunn Co.

No. 3834—Monthly formula service, Wilson & Co.

No. 3835—Stainless steel scoops, pails and funnels, Star Stainless Screw Co.

No. 3836—Revolving cake stands, Cake Stand Manufacturing Co.

No. 3837—White polyethylene coated board, Gair Cartons Division, Robert Gair Co.

No. 3838—Island type bakery display stand, Maine Manufacturing Co.

No. 3840—Water conditioner, Packard Manufacturing Co.

No. 3841—Display case catalog, Maine Manufacturing Co.

No. 3842—Sugar facts report, Refined Syrups & Sugars, Inc.

No. 3843—Bulk trailer, Vacu-Veyor Division of Vacu-Blast Co., Inc.

No. 3844—Lubricant, Warren Refining & Chemical Co.

No. 3845—Topping, S. Gumpert Co.

No. 3847—Upright freezer, Federal Refrigerator Manufacturing Co.

No. 3849—Stabilizer, Seaplant Chemical Corp.

No. 3850—Sweet dough base, H. C. Brill Co., Inc.

No. 3851—Bulk flour bulletin, Fuller Co.

No. 3852—Freezer for storage or self-service use, H. C. Rhodes Bakery Equipment Co.

No. 3853—Sweet dough stabilizer, H. C. Brill Co., Inc.

No. 3854—Truck letters, Plasticles Corp.

No. 3855—Cream filling, S. Gumpert Co.

No. 3856—Toppings and fillings, Max Ams Co.

No. 3857—Edible oil filter, Industrial Filtration Co.

No. 3858—Automatic doughnut making, Doughnut Corporation of America.

No. 3859—Teflon tape, United States Gasket Co.

No. 3860—Utilities cost booklet, Rateonics Corp.

No. 3861—Banana baking recipes, Banamash division of the Catz American Co., Inc.

No. 3862—Pan Service, Chicago Metallic Manufacturing Co.

No. 3863—Film sealer, Cleveland Heat Sealing Equipment Manufacturing Co.

No. 3864—Bakery fixtures, Maine Manufacturing Co.

No. 3865—Depanning service, Mallet & Co., Inc.

No. 3866—Electronic controls, Fielden Instrument division, Robertshaw-Fulton Controls Co.

No. 4056—Bulk flour weigher, Toledo Scale Co.

No. 4059—Self-powered feeder, 200-2,000 lb. per minute, Wallace & Tiernan Inc.

No. 4060—Motor selector guide, Reliance Electric & Engineering Co.

No. 4061—Nylon breather unit for venting Airslide cars and other bulk flour transports, Fuller Co.

No. 4062—Single roll crusher, Sprout, Waldron & Co., Inc.

No. 4063—Research bulletin, Allis-Chalmers Manufacturing Co.

No. 4064—Wire screen folder, Cleveland Wire Cloth & Manufacturing Co.

No. 5502—Sprays and spray concentrates for grain protection, Larvacide Products, Inc.

No. 5561—Attrition mill, Strong-Scott Manufacturing Co.

No. 5596—Fire detection system, Seedburo Equipment Co.

——BREAD IS THE STAFF OF LIFE——

Milling Promotion

PORTLAND—The appointment of Glenn F. Gabbert, Denver, Col., as general superintendent of Terminal Flour Mills at Portland, Spokane Flour Mills at Spokane, and the Mark P. Miller Milling Co., Moscow, has been announced by Henry J. Schmitt, president.

Mr. Gabbert succeeds Clyde Bohne, who has resigned, and will assume his new duties immediately. He has been associated with the Colorado Milling and Elevator Co. at Denver 12 years, and was assistant general superintendent prior to acceptance of his new position.

Send me information on the items marked:

☐ No. 4065—Pallet Unloader
☐ No. 4066—Boxcar Loader
☐ No. 4067—Swivel Nozzle
☐ No. 4068—Pneumatic Unloader
☐ No. 5612—Temperature Indicator

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MILL EFFICIENCY

(Continued from page 9a)

took 1.2 min. per load. Grinding capacity should be fitted to volume. We noticed that where adequate grinding capacity was provided, there were fewer delays. We did find that delay for grinding accounted for about 90% of all the receiving time. The operation that took the most of the man labor associated with grinding was changing the screens. To improve this operation, screen changes should be made from the grinding floor instead of making a trip to the basement down a stairway, a ladder or manlift. Incidentally, the stairway proved quicker than either the manlift or the ladder. There appears to be an opportunity for some elevators to reduce the number of screen changes. The ones we studied used as many as seven screen sizes. However, only 4 of these accounted for 92% of the orders. These four most frequently used screens were: ⅛ in., ¼ in., 9/16 in. and 1 in.

The use of two grinding bins added considerably to the flexibility of the grinding and mixing operation. With two bins the receiving operations could continue without delay while grinding and mixing were being done from the other bin. Operators could achieve some increase in efficiency by discouraging unusually fine grinding. We found that a ton of shelled corn can be ground coarse in one third the time required to grind oats fine on the same grinder. Fine grinding probably can't be eliminated, but a little work on this might reduce the amount of fine grinding that needs to be done.

Mixing: Standard time requirements for mixing a load of feed turned out to be 2.5 min. Thirteen separate work elements were involved in the mixing operations. Considerable travel was involved in the mixing operation, mainly because the addition of supplement was required and, in many instances, the supplement was stored some distance away.

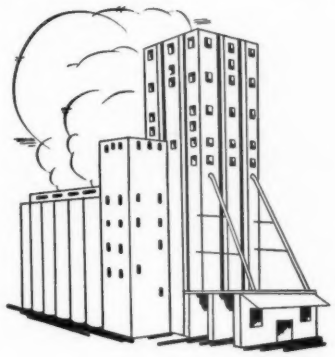
Orders generally required one to three bags of supplement. It took almost as much time to get one bag or even a part of a bag as it required to get four or five bags when the work was performed with a hand truck. If supplement can be stored near the mixer, it is usually quicker to carry or slide the supplement to the mixer. Where supplement was stored 100 ft. from the mixer, it required ¾ min. to make a round trip. If long trips with a hand cart cannot be avoided, try to make a practice of moving a full hand cart of supplement each trip. Supplement stored upstairs required one-third more handling time than storage on the mixing floor, even when hand carts and slides were used. This suggests that every effort should be made to store the supplement on the mixing floor and as near the mixers as is practicable. Some of the labor required for mixing could be saved if the most frequently-used supplements were stored nearest the mixer. It was surprising how frequently this work principle was violated in Indiana elevators.

Additional savings in the mixing operation may be possible by prepackaging antibiotics and minor elements in quantities determined to be appropriate for the most common order sizes. Companies which furnish these might put them in smaller packages. Weighing out less than a full sack of any material was observed to be time-consuming.

Attention to detail may save mixing time. For example, opening bags took nearly one sixth of the mixing time. Pre-positioning a knife would save needless time looking for it. Workers were observed in a few cases to walk 10 to 15 ft. to dispose of each string removed from a sack. A receptacle near the mixer should eliminate this. In elevators with only one mixer, there was occasionally a wait for the grinding to finish. Ordinarily, the wait was not long enough to permit the workers to start some other job. In elevators with two mixers, work can be coordinated so that while feed is being ground and mixed in one mixer, another feed order can be "bagged off" or "bulked off" from the other mixer. An extra mixer has several advantages, but better use of the worker's time is an important one.

Moving Feed to Vehicle: The actual transporting time for moving sacked feed to the customer's vehicle was not great, but the sacking operation itself was time-consuming. For the average worker, about one third of the time required for this operation was spent in tying sacks. It is especially important that the person tying in a two-man operation be able to keep up with the bagger. If the tying job seems to be a bottleneck, some training may well pay for itself in time saved. If workers will pre-position sacks and strings during odd times, some of the delays in sacking and handling the sacked feed will be eliminated. Some elevators make good use of chutes, slides and conveyors to move sacked feed to the customer's vehicle. If volume of feed business will permit, equipment of this kind might be well substituted for the labor necessary to move the sacks out by hand or transport the feed by hand truck.

Many elevators are equipped for



COULD YOUR FUMIGATION RESULTS HAVE BEEN BETTER?

Grain fumigation, with occasional exceptions, is pretty well over for this crop year. So this is a good time to review your past season's treating. Are you satisfied? Were results good? If not, why not? Unless you know the reason, the same thing could happen again.

Many people think that the fumigant itself is just about the whole show in successful fumigation; that you buy it, send it upstairs, and after that it's automatic. If results aren't right —then, naturally, it's the fumigant.

Well, we've always pointed out that different types of fumigants differ markedly in adaptability and practical effectiveness. But what we're emphasizing now is that even a good grain fumigant is only one factor in an insect control program.

What other factors should be considered to help your fumigant give best results?

First, no grain fumigant will do a really good job if grain condition is "off". If condition is just a little "off", the fumigant will be handicapped. If it's badly "off"—as indicated by rising temperatures—you'll almost certainly have poor results. Why? Because you're depending on the fumigant to reach and penetrate each kernel. Well, it just won't do it when the grain is heating and giving off a lot of carbon dioxide. The remedy? Run the grain and get it back in shape before trying to fumigate. Or, if you can't do that, pour the dosage to it—extra dosage. But extra dosage is a poor second choice.

Next, do you have any grain handling or structural features that will prevent proper application or violate fumigation principles? For instance, lack of access to the grain stream; ventilators or fans that pull the gas out of the bin; extra-deep bins calling for special application methods. Such problems should be anticipated and corrected before treating starts.

Next, how about treating personnel, the human element? Do you really know that correct procedure is being followed, or do you merely assume it is? Do you ever go upstairs during treating? Do you give your upstairs man any help—or more than casual instructions? Does he have too much other work to do to give proper attention to treating? Does he have the stuff to work with? Does he have a gas mask handy?

Next, are you treating "in time", either preventively or while infestations are light—before gradual heating and condition factors have begun to take over? With insect grading and flour mill attitudes on high fragment counts the way they are now, early treating pays off. Besides, the bugs are twice as hard to kill if you wait too long.

It's now time to consider the fumigant. Is the one you're using really okay on fire-hazard, human health, plant safety and residual effect on the grain? Is it effective or do you have to figure on re-treating if you store the grain for months? (You shouldn't.) Is it economical? Are you confusing a low per-gallon price with low unit cost? And above all, does your fumigant have the adaptability to meet all your conditions?

Next, adequate dosage. A good rule is: at least as much dosage as the fumigant manufacturer recommends; more under any conditions you recognize as tough.

Finally, proper application. Do you really know the recommended methods of application? (When we investigate treating failures, we often discover wide departure from our basic recommendations.)

In short, a review of your whole grain fumigation program now can improve next season's treating results and do so at a lower cost.

Weevil-Cide
The DEPENDABLE GRAIN FUMIGANT
Listed by Underwriters' Laboratories, Inc.

For Information, Write: THE WEEVIL-CIDE COMPANY
1323 Union Avenue Kansas City 1, Missouri

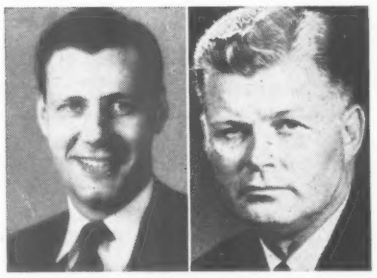
handling bulk feed. Bulk delivery appears to be growing in favor, both on the part of farmers and feed dealers. The extent to which elevators can use bulk handling of feed is, of course, dictated by the facilities on the farm. As more feed is delivered by the bulk method, elevators can look forward to further mechanizing their feed mixing and grinding operations. It will save labor for them and in some instances may help increase the volume of business.

Some general considerations which do not fit specifically under the heading which we have previously mentioned may be worth noting. Many of the operations connected with the feed mixing and grinding work have certain fixed times. On these parts of the work, efficiency can be increased by increasing order size. Order size, of course, varies widely, and the elevator must maintain a flexible operation to handle varying sizes of orders. However, any adjustments which the management can make to reduce this variation should tend to improve efficiency of the labor. Quantity discounts may be one means of encouraging larger orders.

General backtracking of employees from job to job was observed. Some planning on the sequence of jobs might allow circular travel to be practiced and thereby eliminate much of this backtracking. Sometimes the most used materials will be stored in the most out-of-the-way places. Specialization of labor in the feed mill was apparently carried too far in many cases. With relatively small crews, each man should be able to do most of the jobs. This allows flexibility of the operation and reduces idle time. Poor housekeeping and poor lighting resulted in lost motion in many places. Sometimes poor employee instruction and scheduling caused poor work methods. A good inter-communication system helps on this, but even here the manager must give special care to provide clear instructions.

Small tools, such as brooms and shovels, were often lost. They should be duplicated and each put in its place. A few minutes each day spent looking for a broom or shovel will soon pay for one of these small tools.

Many of these suggestions are small items, but most of them are not costly. When added together they may result in a substantial improvement in labor efficiency in the elevator. You can do some of this type of efficiency research for yourself. Take time to look around—visit other elevators—then criticize your own operations. Your mills and elevators should be operated as efficiently as possible. It means a better distribution system for marketing grain, and it helps keep our competitive economy healthy.



C. A. Anderson, Jr. James W. Cox

APPOINTED—Fulton Bag & Cotton Mills announces the appointment of Charles A. Anderson, Jr., to the post of sales representative in Oklahoma City, and of James W. Cox to the sales department of the company's Dallas branch. Mr. Anderson graduated from Tulane University. He joined the sales department of Fulton's New Orleans office in 1953 where he remained until transferring to Fulton's Dallas branch in 1955. Mr. Cox joined Fulton's Dallas branch in 1932 and has served in various capacities in both office and sales work. The activities of both men are under the supervision of Fulton's Dallas branch located at 4301 S. Fitzhugh, whose manager is T. Raymond Berry.

CLASSIFIERS

(Continued from page 15a)

is divided into two streams. It would be possible (and also costly) to have a group of such classifiers arranged in series, with the succeeding machine working on stock classified as the coarse fraction by its predecessor.

It is also pointed out here that at least two other air vortex classifiers are being produced; one is of German manufacture and another by the Microcyclomat Co.

It is also possible that a considerable amount of smoke and dust may be raised by possible process patents cropping up as the classifiers are used in flour milling applications. One has only to recall the long legal battles which accompanied the introduction of the purifier.

In any event, the use of such a device in flour milling appears to be in the initial stages of research and, as Mr. Wichser and Dr. Shellenberger pointed out almost 10 years ago, "Practical implications from this study are great."

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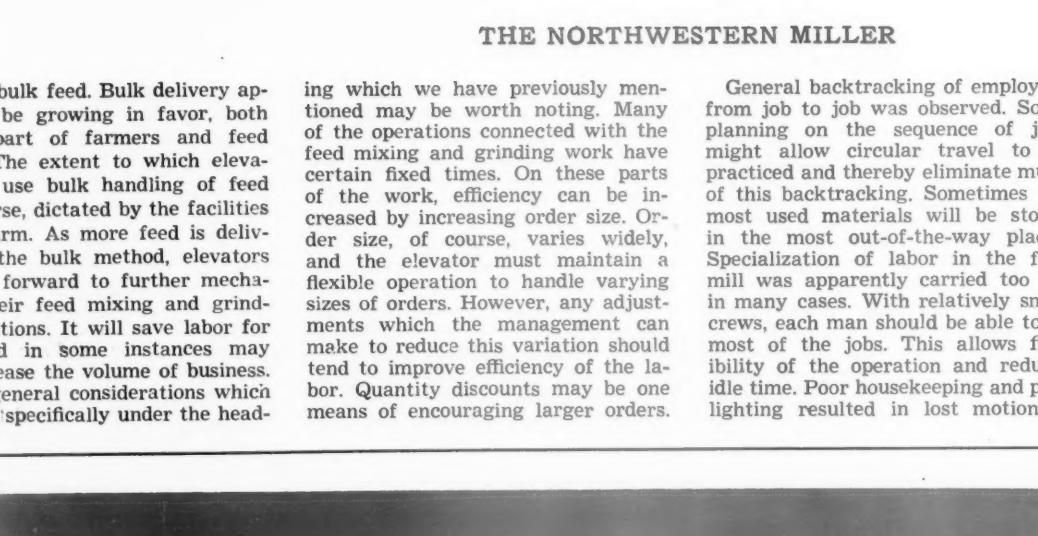

This high-capacity machine has set new standards in efficiency purification . . . in simplicity and accuracy of control.

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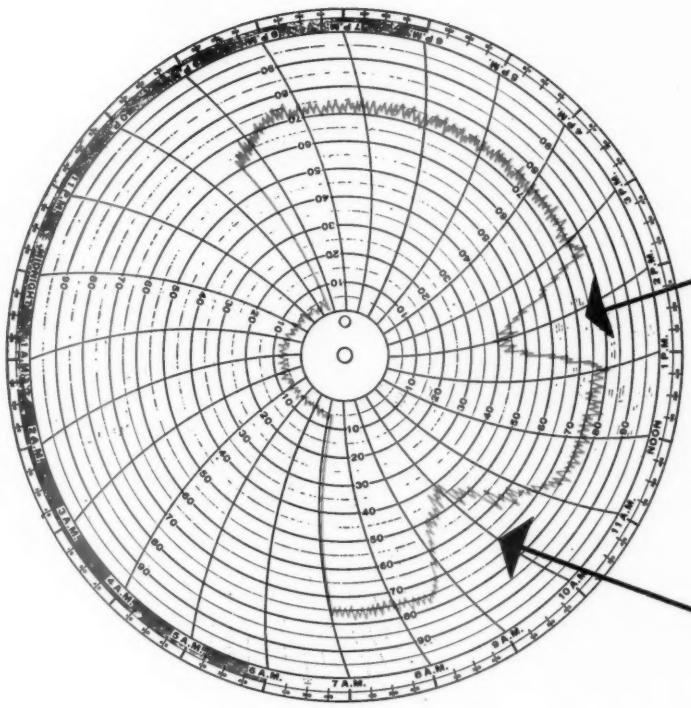


these mean trouble...

IT MIGHT BE a broken belt, a torn sieve, or a choke-up somewhere in the spouting.

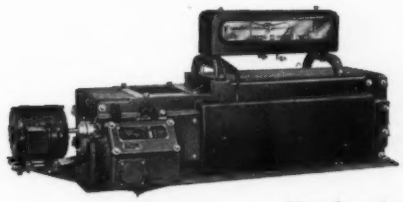
But... no matter *what* causes the flow variation in the flour stream ... it's spotted the INSTANT it happens. One look at the graphic recorder operated from the W&T Massometer or Merchen Scale Meter tells the story. Even the smallest momentary fluctuations in flow rate are detected immediately and recorded accurately by these mill "watch dogs."

W&T Massometers and Merchen Scale Meters provide a continuous record — *by weight* — of actual mill performance. They tell you the *exact* flow rate of your streams and they pinpoint time and production losses.

Guaranteed to 1% accuracy, the Massometer will handle flour flows up to 200 pounds per minute... the Merchen Scale Meter, up to 600 pounds per minute. For other applications the Meter will handle flows up to 3000 pounds per minute. Both instruments have been tested and proved highly dependable in hundreds of installations throughout the country.

For complete information, write us today or communicate with your nearest W&T representative.

Massometer



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Why Clean Grain for Milling?

Since modern bakeries have so extensively replaced home baking, grain cleaning has become much more important. Modern bakers judge flour entirely by such standards as comparative color, loaf volume, ash content, protein, etc.

These conditions have led to the creation of formulae and flour specifications. In order to fill the specifications of the bakers, millers in turn have found it necessary to blend various wheats. The wheats having the needed combinations of properties are seldom obtained from one locality, but must often include blends from wheats raised hundreds of miles apart.

Naturally, the wheats from the different sections vary as to the nature and percentage of foreign matter.

These are the conditions that demand grain cleaning equipment that is accurate, flexible, and easily adjusted.

Many statements have been made regarding the real value of grain cleaning. One mill president remarked a while ago that he was decidedly pleased when the Carter-Mayhew organization began the study of cleaning systems as a whole, for in the past, studies of their mills for improvements had always started at the first break rolls. A Superintendent in charge of a 6000 barrel mill stated that the installation of Carter-Mayhew cleaning machinery had so improved the cleaning they no longer had to "fight the mill" to get proper results in the milling process.

To make flour without properly cleaning the wheat causes demands upon the purifiers and sifters that they cannot meet successfully. The result is that much of the more valuable parts of the wheat are carried to the tail of the mill. Clean wheat permits a greater extraction of high grade flour.

To permit the most efficient milling, grain must be free of foreign substances, clean and properly conditioned.

The facilities of America's Largest Manufacturer of Grain Cleaning Equipment are at your service. Write for information on improved grain cleaning methods.

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